4. Alignment and Adjustments (Electrical)

4-1 Preadjustment

4-1-1 Factory Mode

1. Do not attempt these adjustments in the Video Mode.

2. The Factory Mode adjustments are necessary when either the EEPROM (IC902) or the CRT is replaced.

3. Do not tamper with the "Adjustment" screen of the Factory Mode menu. This screen is intended only for factory use.

4-1-2 When EEPROM (IC902) Is Replaced

1. When IC902 is replaced all adjustment data revert to initial values. It is necessary to re-program this data.

2. After IC902 is replaced, warm up the TV for 10 seconds.

4-1-3 When CRT Is Replaced

Make the following adjustments after setting up purity and convergence:

White Balance
Sub-Brightness
Vertical Center
Vertical Size
Horizontal Size

4-2 Factory ("Service") Mode

4-2-1 Procedure for the "Adjustment" Mode

1. This mode uses the standard remote control. The Service Mode is activated by: (1) pressing the "FACTORY" service key on the local-keyboard, or (2) by entering the following remote-control sequence (within 2 seconds):

   STAND-BY →DISPLAY →MENU→ MUTE→ POWER ON

2. The "SERVICE (FACTORY)" message will be displayed. The Service Mode has three components: Adjustment, Option Bytes and Reset.

3. Access the Adjustment Mode by pressing the "SELECT" keys (◀ ▶). The adjustment parameters are listed in the accompanying table, and selected by pressing the "SELECT" keys (▲,▼).

4. Selection sequences for the PAL/SECAM B/G, L systems:

   down or up key:

   TXP>SBT>SCT>SCR>STT>BLR>BLG>RG>
   GG>BG>PWL>SC>VSL>VA>PVS>PHS>
   EW1>EWP>EWUC>EWLC>VSC>HP>HB>
   TC>EW2>CDL>BKS>PDL>WS>VM

5. The "SELECT" keys (▲,▼) increase or decrease the adjustment values, (stored in the non-volatile memory) when Adjustment Mode is cancelled.

4-2-2 Adjust

OSD	Initial	Adjust	Range	Function	OSD	Initial	Adjust	Range	Function
TXP	4	Fix	0-7	Text Position	PHS	39		0-63	PAL Horizon Shift
SBT	10		0-23	Sub Brigh	EW1	25		0-63	EW
SCT	10		0-23	Sub Contrast	EWP	5		0-63	EW (Parabola)
SCR	13	Fix	0-13	Sub Color	EWUC	32	Fix	0-63	Upper Corner
STT	13	Fix	0-13	Sub Tint	EWLC	32	Fix	0-63	Lower Corner
BLR	32		0-63	Low Light R	VSC	32	Fix	0-63	Vertical scroll
BLG	32		0-63	Low Light G	HP	34		0-63	H-Paralleogram
RG	32(35)		0-63	High Light R	HB	32		0-63	Horizontal Bow
GG	32(35)		0-63	High Light G	TC	26		0-63	EW Trapezium
BG	32(35)		0-63	High Light B	EW2	32		0-63	28”EW
PWL	15	Fix	0-15	Peak white level	CDL	5(3)	Fix	0-15	Cathode Drive Level
SC	12	Fix	0-63	S-Correction	BKS	1	Fix	0-1	Black Stretcher
VSL	35		0-63	Vertical Slope	PDL	7	Fix	0-15	PAL Delay
VA	15		0-63	Vertical Amplitude	WS	3(0)	Fix	0-3	White Stretch
PVS	17		0-63	PAL Vertical shift	VM	0	Fix	0-3	Amplitude of Scan Velocity

4-2-3 AGING Mode(Reference Only)

This pattern is used for pre-heating the CRT during manufacturing-it is accessed in the factory by twice pressing the “FACTORY” key.

Even if the TV power is cut off, the Aging Mode is not cancelled.
The “AGING” marking is displayed on the screen.
The AGING mode is cancelled by epresing the “FACTORY” key.

4-2-4 Option

4-2-4 OPTION

NO.	OSD	Adjust	Range
1	HELP MASSAGE	ON	ON/OFF
2	LANGUAGE	EUROPE	EUROPE/E-EUROPE
3	SYSTEM	CF	CF/CI/CW/CX/CB/CII/CS
4	ATS OPTION	ON	ON/OFF
5	AUTO POWER	ON	ON/OFF
6	S-Modulation	54%	54%/80%/100%
7	TTX	ON	ON/OFF
8	LNA	OFF	ON/OFF
9	WIDE OPTION	OFF	ON/OFF
10	AUTO TUNE	D/K	D/G, B/G
11	VOLUME	EUROPE	EUROPE/ARAB

4-2-5 Reset

The Reset Mode is used during factorying inspection
Function Reset : After Factorying Reset, the following items itens revert to their initial values.

1. Volume 10
2. Program Channel 1
3. P- STD MEMORY
4. Auto Power ON
5. NR OFF
6. Skip(Store / Clear) ALL CLEAR

Cautim : When the EEPROM is replaced ; all items revert to their initial values.

4-3 Other Adjustments

4-3-1 General

1. Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync and focus.

2. The picture should have good black and white details. There should be no objectionable color shading; if color shading is present, perform the purity and convergence adjustments described below.

3. Use the specified test equipment or its equivalent.

4. Correct impedance matching is essential.

5. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test results.

6. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.

7. Do not attempt to connect or disconnect any wires while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.

8. To protect against shock hazard, use an isolation transformer.

4-3-2 Automatic Degaussing

A degaussing coil is mounted around the picture tube, so that external degaussing after moving the TV should be unnecessary. But the receiver must be properly degaussed upon installation.

The degaussing coil operates for about 1 second after the power is switched ON. If the set has been moved or turned in a different direction, disconnect its AC power for at least 10 minutes.

If the chassis or parts of the cabinet become magnetized, poor color purity will result. If this happens, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube and the sides and front of the receiver. Slowly withdraw the coil to a distance of about 6 feet before removing power.

4-3-3 High Voltage Check

CAUTION: There is no high voltage adjustment on this chassis. The B+ power supply must be set to +130 volts (Full color bar input and normal picture level).

1. Connect a digital voltmeter to the second anode of the picture tube.

2. Turn on the TV. Set the Brightness and Contrast controls to minimum (zero beam current).

3. The high voltage should not exceed 30KV.

4. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 30KV under any conditions.

4-3-4 FOCUS Adjustment

1. Input a CROSS hatch signal.
2. Adjust the tuning (H-VR → V-VR) for the clearest picture.
3. Adjust the FOCUS control for well defined scanning lines in the center area of the screen.

4-3-5 Screen Adjustment

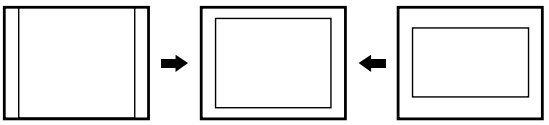
1. Turn to the White Signal.
2. Adjust the VR screen for a normal picture is (no blooming or flyback line).
   Input the Factory → G2-Adjust choice → Screen VR tunning → OK Mode choice

4-3-6 Purity Adjustment

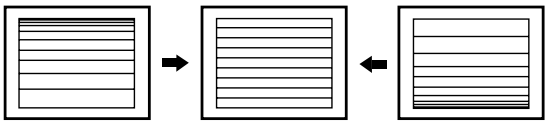
1. Warm up the receiver for at least 20 minutes.
2. Plug in the CRT deflection yoke and tighten the clamp screw.
3. Plug the convergence yoke into the CRT and set in as shown in Fig. 5-1.
4. Input a black and white signal.
5. Fully demagnetize the receive by applying an external degaussing coil.
6. Turn the CONTRAST and BRIGHTNESS controls to maximum.
7. Loosen the clamp screw holding the yoke. Slide the yoke backward or forward to provide vertical green belt. (Fig. 5-2).
8. Tighten the convergence yoke.
9. Slowly move the deflection yoke forward, and adjust for the best overall green screen.
10. Temporarily tighten the deflection yoke.
11. Produce blue and red rasters by adjusting the low-light controls. Check for good purity in each field.
12. Tighten the deflection yoke.

4-3-7 I ²C BUS GEOMETRIC Adjust

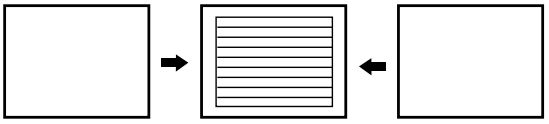
V SIZE(VA)



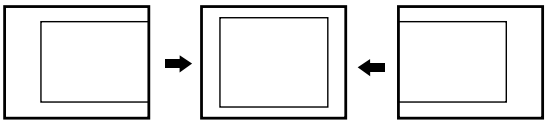
V LINEARITY (SL)



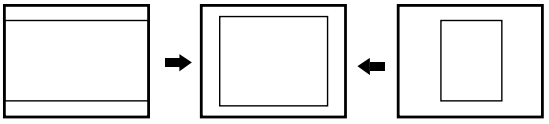
V S CORRECTION (SC)



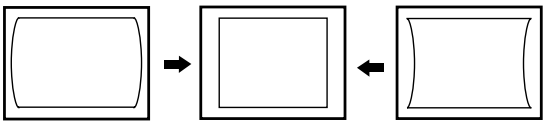
H POSITION (PHS)



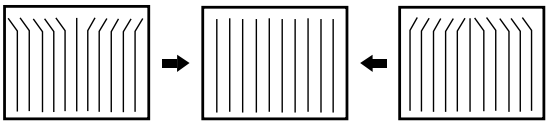
H SIZE



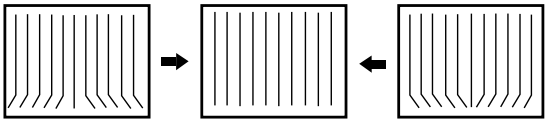
PIN COMP (PEP)



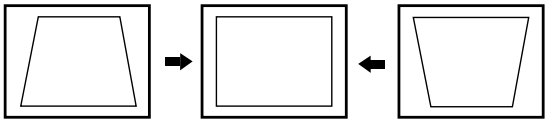
UP CPIN (PEUC)



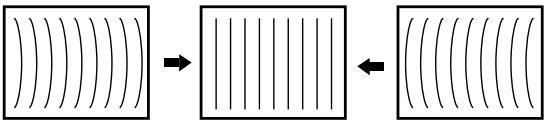
LO CPIN (PELC)



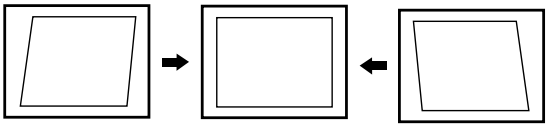
TILT (TC)



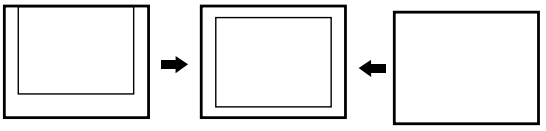
AFC BOW (HB)



AFC ANGLE (HP)



V POSITION (PVS)



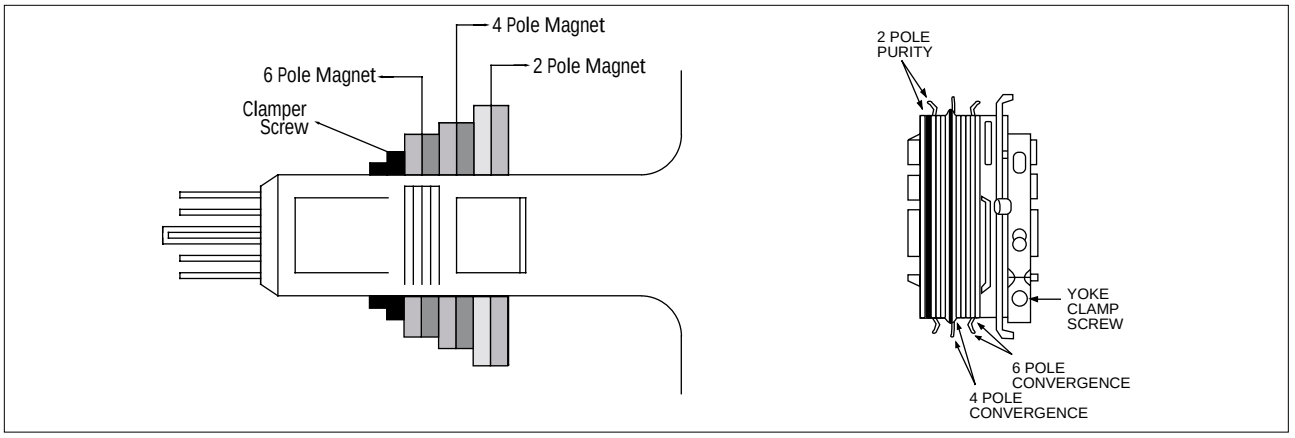


Fig. 5 -1 Convergence Magnet Assembly

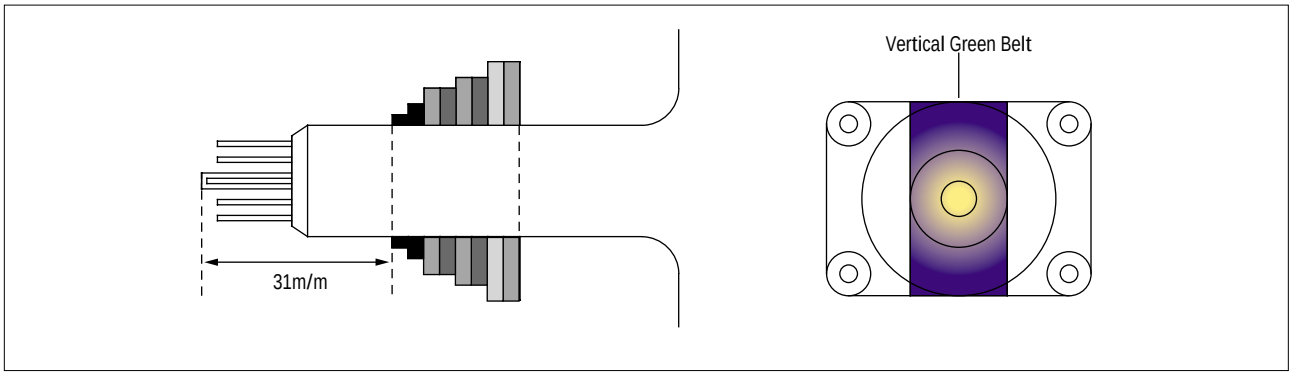


Fig. 5-2 Center Convergence Adjustment

4-3-8 White Balance Adjustment

4-4-7 (A) HIGH-LIGHT ADJUSTMENT

1. Input either a Lion Head or a “pure white” pattern.
2. Warm up the TV for 30 minutes.
3. Check the data in the Service Mode
4. Adjust RG, BG in the Factory Mode.

4-4-7 (B) LOW-LIGHT ADJUSTMENT

1. Automatically accomplished during the high-light adjustment.

4-3-8 Center Convergence Adjustment

1. Warm up the receiver for at least 20 minutes.

2. Adjust the two tabs of the 4 pole magnets to change the angle between them. Superimpose the red and blue vertical lines in the center area of the screen.

3. Adjust the Brightness and Contrast controls for a well defined picture.

4. Adjust the two-tab pairs of the 4 pole magnets, and change the angle between them. Superimpose the red and the blue vertical lines in the center area of the screen.

5. Turn the both tabs at the same time, keeping the angle constant, and superimpose the red and blue horizontal line in the center of the screen.

6. Adjust the two-tab pairs of the 6-pole magnets to superimpose the red and blue line onto the green. (Changing the angle affects the vertical lines, and rotating both magnets affects the horizontal lines.)

7. Repeat adjustments 2~6, if necessary.

8. Since the 4-pole magnets and 6-pole magnets interact, the dot movement is complex (Fig. 5-3).

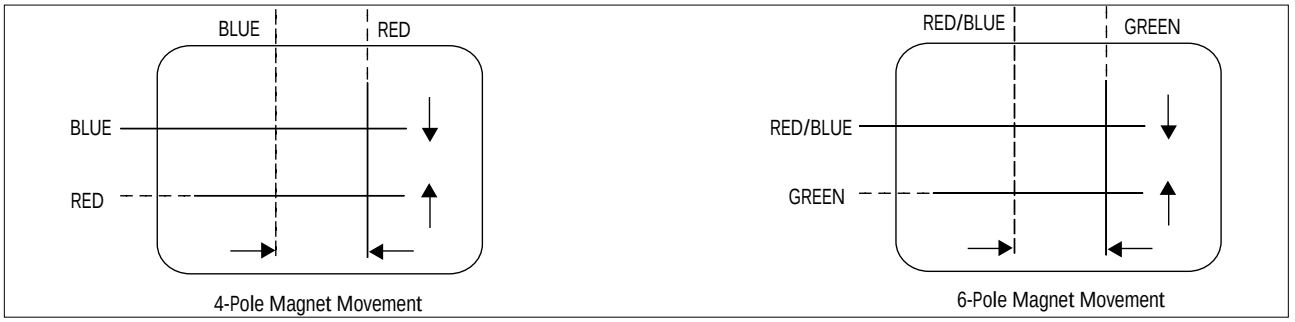


Fig 5-3 Center Convergence Adjustment